

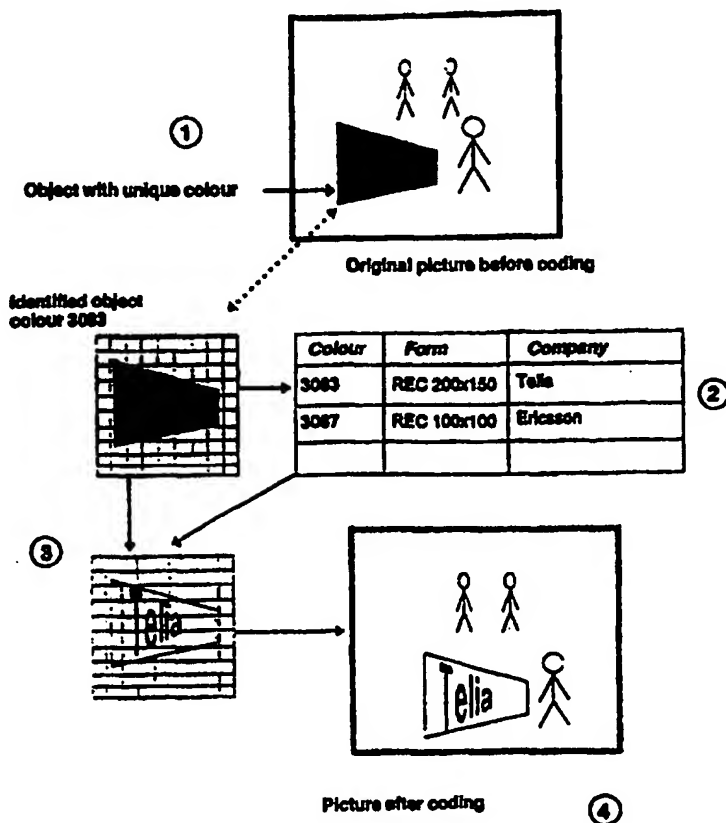


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/SE97/00870 <b>(22) International Filing Date:</b> 27 May 1997 (27.05.97) <b>(30) Priority Data:</b> 9602503-6      20 June 1996 (20.06.96)      SE <b>(71) Applicant (for all designated States except US):</b> TELIA AB [SE/SE]; Mårbackagatan 11, S-123 86 Farsta (SE). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> MAGNUSSON, Peter [SE/SE]; Blomstergatan, 20, S-653 42 Karlstad (SE). BENGTTSSON, Leif [SE/SE]; Backvindeln 6, S-129 42 Hägersten (SE). <b>(74) Agent:</b> KARLSSON, Berne; Telia Research AB, Rudsjörterrassen 2, S-136 80 Haninge (SE).		<b>(81) Designated States:</b> NO, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** ADVERTISEMENT AT TV-TRANSMISSION**(57) Abstract**

Invention relating to a device and method which allows generation of digital advertisement displays in real time at digital TV-transmissions. The invention is characterized in that it is applicable for digital TV-transmission. At such transmission a digital coding of the image material is made before the transmission is made; the main purpose of this coding is to compress the content of the image as much as possible to minimize necessary bandwidth utilization at transmission of the signals. The invention is based on that one in connection with this coding by means of recognition of pattern identifies different in advance defined objects in the image, such as for instance a display with one in the connection unique colouring. Via one in the device arranged table, the image coder can, on the basis of identified colouring, obtain information of what the original object looks like, for instance an advertisement display. In said table there also is defined the advertisement display which shall be placed in for that purpose intended space. Starting out from the identified object in the image storage and the original form, the advertisement display can be transformed and introduced into the image storage. The TV-viewers in this way will see a virtual advertisement message in the TV-transmission.



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## TITLE OF THE INVENTION: ADVERTISEMENT AT TV-TRANSMISSION

## FIELD OF THE INVENTION

The present invention relates to a device and a method  
5 for generation of digital advertisement displays in real  
time at digital TV-transmissions.

## PRIOR ART

Advertisement displays which are utilized in  
10 connection with for instance sport events, which are  
televised, normally consists of an advertising message  
which is applied to a supporting material of paper,  
plastics, metal etc. The displays therefore normally are  
not exchangeable during the event itself, but may be  
15 exchanged depending on which companies that want to have  
advertisement space at respective event. The total  
advertisement space therefore, at each specific event, can  
be said to be restricted to the for that purpose intended  
advertising places. The technical problem the invention  
20 relates to is to bring about a device and a method which at  
digital TV-transmissions makes possible one in principle  
infinite number of advertising messages at in advance  
decided places by at transmission utilize digital image  
processing.

25 To find out whether the prior art describes and  
possibly solves this problem a preliminary investigation  
was made at which the following documents were found.

D1: US,A 5 231 494

D2: US,A 5 319 455

30 D3: EP,A2 424 648

D1 describes a device which compresses a set of TV-  
signals, such as a main program signal and a great number  
of demographically selected advertising messages. The great  
number of compressed TV-signals are combined to a combined  
35 signal for transmission on one single TV-channel. A TV-  
receiver which receives the combined signal identifies

characteristics of a televised viewer, and selects a specific TV-signal from the compressed TV-signals from the received combined signal depending on the characteristics of the viewer.

5 D2 describes an interactive multimedia system with distributed processing of video image information in nodes arranged in a cable TV system. The nodes can be used to distribute customer adapted advertisement to TV-viewers.

D3 describes a method and a device to transmit  
10 demographically selected TV-advertisement. A first TV-channel includes TV-programs and periodical advertisement messages. A second TV-channel includes different advertisement messages. Demographical characteristics of a televised viewer are identified, and selected advertisement  
15 messages are transmitted to said viewer depending on the demographical characteristics of the viewers.

The above mentioned found documents consequently describe the principle to generate virtual advertisement messages at TV-transmissions.

20 These documents, however, do not solve the above described problems because they do not explicitly describe advertisement messages at sport events which are arranged at in advance decided places and with in advance decided sizes.

25 The present invention in addition utilizes a digital image processing technology at transmission of advertisement messages which is not at all described in the above mentioned documents.

### 30 SUMMARY OF THE INVENTION

The aim with the present invention consequently is to solve the above described problem.

This aim is achieved by means of a device and a method which is characterized in that before said TV-transmission  
35 the image material is coded in an image coder, which image coder by recognition of pattern identifies and codes

different predefined objects in the image material, at which the image coder, on the basis of said identification of said predefined object, via a table obtains information about the relation of the sizes of said predefined object, for instance REC 200 x 150, and which advertisement display, for instance Telia, that shall be placed in the place for the image which corresponds to the place of image of the predefined object on the screen of just any TV-receiver.

A big commercial advantage of the present invention consequently is that advertisement displays in for instance a soccer arena in principle can be changed just any time during a live TV-transmission of a soccer match. An operator in this way can sell one and the same advertisement space to a number of different companies.

Further characteristics of the present invention are given in the independent patent claims.

#### BRIEF DESCRIPTION OF THE DRAWING

In the following a detailed description of an embodiment of the invention is given with reference to the only drawing.

Figure 1 shows in principle the coding of a predefined object and transformation of said object to a virtual advertisement display in a TV-viewer's receiver.

#### DETAILED DESCRIPTION OF AN EMBODIMENT OF THE INVENTION

In the following a description of the invention is given with reference to Figure 1.

The invention is applicable to a digital TV-transmission (DVB). At digital TV-transmission an extensive digital image processing (coding) is made before the transmission of the image material, principally aimed at compressing the content as much as possible in order to reduce the bandwidth of the transmission. The invention is based on that one in connection with this coding by

recognition of pattern identifies different predefined objects in the image, for instance a display with a unique colour 1. It is in this case actually the colour which is identified at the coding. Via a table 2, the coder can, starting out from identified colour, get information about what the original object looks like. It can for instance be a rectangle with the measures 200 x 150 cm. In the table there is also defined the advertisement display which shall be applied, for instance Telia. On the basis of the identified object in the image storage and the original, the advertisement display can be transformed and introduced into the image storage 3. The TV-viewers in this way will see different virtual advertisement displays in the TV-transmission 4 depending on the colouring of the predefined object.

If, for instance, the colouring has the code "3083" an advertisement display with the text Telia is shown, and if the colouring has the code "3087" an advertisement display with the text "Ericsson" is shown. The operator can for instance see to it that the colouring of the predefined object changes between the codes "3087" and "3083" so that for instance the advertisement display "Ericsson" is shown during five minutes, whereas the advertisement display "Telia" is shown during ten minutes. This of course depends on how much advertising time Telia respective Ericsson is buying from the operator.

The table in the coder can of course be updated by an operator just as he/she wants, depending on which advertisement displays that shall appear during the TV-transmission.

The above described is only to be regarded as an advantageous form of the present invention, and the extent of protection of the invention is only defined by what is indicated in the following patent claims.

## PATENT CLAIMS

1. Device for generation of digital advertisement displays in real time at digital TV-transmissions, characterized in that it includes an image coder which is arranged, before said transmission of an image material, to identify and code different predefined objects in said image material by recognition of pattern (1, 2), at which said image coder, on the basis of said identification of said predefined object, for instance "3083", "3087", via a table (2) obtains information about the relations of the original dimensions of said predefined object, for instance REC 200 x 150, and which advertisement display, for instance Telia, that shall be placed on the image place which corresponds to the image place of said predefined object (3) on the screen of just any TV-receiver (4).

2. Device according to patent claim 1, characterized in that said table is arranged in the storage (memory) of said coder, preferably RAM-storage.

3. Device according to any of the patent claims 1 or 2, characterized in that said image coder at identification of said predefined object identifies the colouring of said object (1).

4. Device according to patent claim 3, characterized in that said different colourings are coded with different reference numbers, for instance "3083", "3087", at which said image coder looks for said reference number in said table.

5. Device according to patent claim 4, characterized in that on the basis of the colour of the identified object with a specific reference number, for instance "3083", and original form of said object, for instance REC 200 x 150, an advertisement display, i.e. Telia, is transformed and introduced into an image storage (3).

6. Device according to any of the previous patent claims, c h a r a c t e r i z e d in that said table can be updated just as is wanted by an operator depending on which advertisement displays that shall appear during a TV-transmission.

7. Method for generation of digital advertisement displays in real time at digital TV-transmissions, c h a r a c t e r i z e d in that it includes the steps:

a) that before said TV-transmission of just any image material a coding is performed of said image material, at which an image coder by recognition of pattern identifies different predefined objects, for instance "3083", "3087", in said image material (1, 2).

b) that said image coder, on the basis of said identified predefined object, for instance "3083", "3087", via a table (2) obtains information about the relation of the dimensions of said predefined object, for instance REC 100x100, and which advertisement display, for instance Ericsson, that shall be placed into the image place which corresponds to the image place of said predefined object (3) on the screen of just any TV-receiver (4).

c) that said image coder by means of transmission equipment transmits said information to the image storage (memory) (3) of just any TV-receiver, after which a wanted specific advertisement display, for instance Ericsson, corresponding to identified predefined object, for instance "3087", is shown on the screen of said TV-receiver.

8. Method according to patent claim 7, c h a r a c t e r i z e d in that said table is provided in a storage (memory), preferably a RAM-storage in said image coder.

9. Method according to any of the patent claims 7 or 8, c h a r a c t e r i z e d in that at identification and coding of said predefined object, the colouring of the object is identified, at which said image coder on the basis of identified colouring obtains information of what



the original object looks like, and which advertisement display that shall be applied.

10. Method according to any of the patent claims 7-9, c h a r a c t e r i z e d in that on the basis of said  
5 identified object in the storage, for instance "3083", and original form, for instance REC 200 x 150, said advertisement display, for instance Telia, is transformed and introduced into said image storage (3).

11. Method according to any of the patent claims 7-10,  
10 c h a r a c t e r i z e d in that TV-viewers will see different virtual advertisement displays during the TV-transmission depending on the colouring, for instance "3083", "2087" of said predefined object.

12. Method according to any of the patent claims 7-11,  
15 c h a r a c t e r i z e d in that said table in just wanted way can be upgraded by an operator depending on which advertisement displays that shall be shown during the TV-transmission.

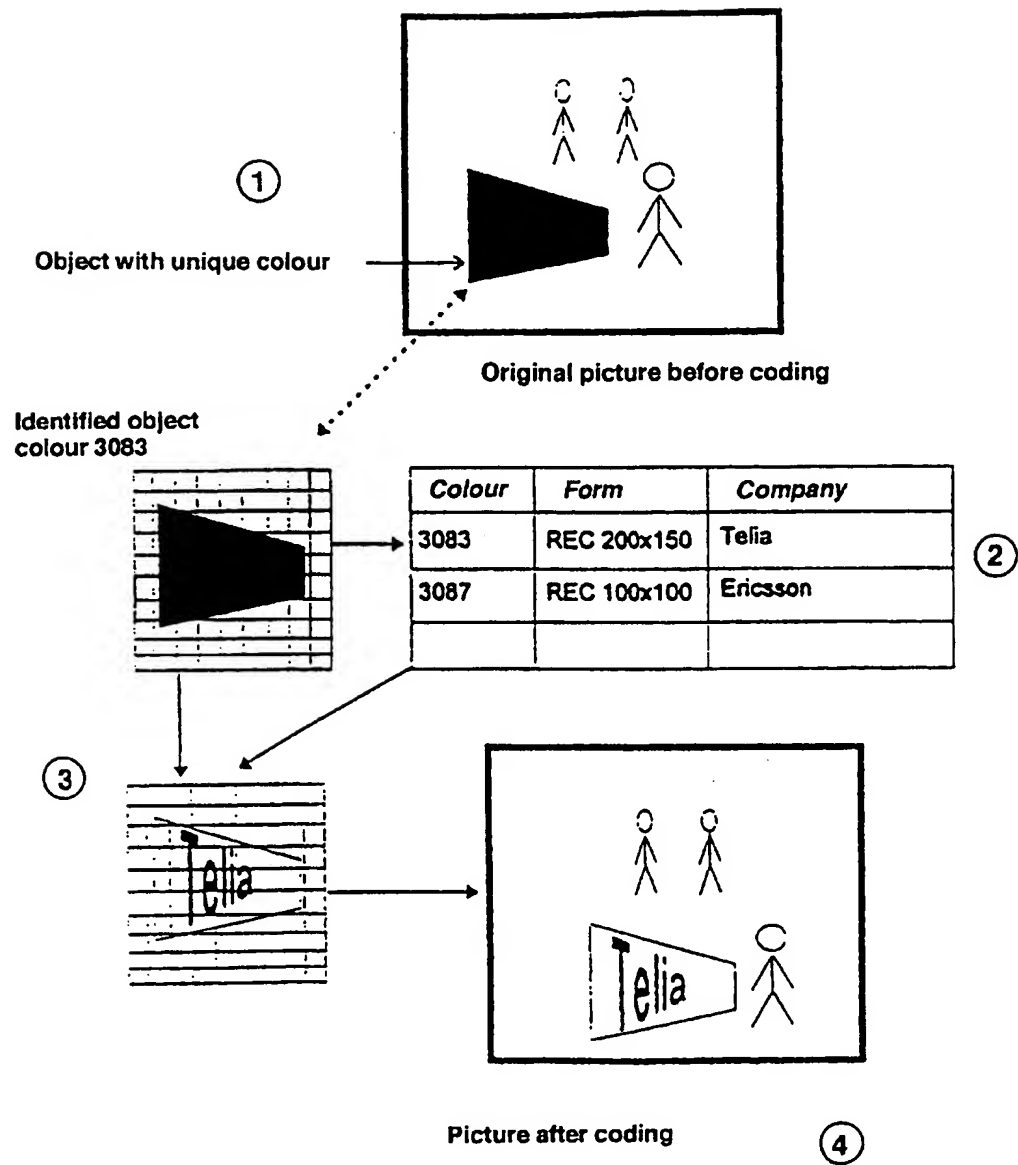


Figure 1

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 97/00870

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04N 5/272, H04N 7/08, H04N 7/16  
According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5231494 A (D.E. WACHOB), 27 July 1993 (27.07.93), cited in the application --	1-12
A	US 5319455 A (W.L. HOARTY ET AL), 7 June 1994 (07.06.94), cited in the application --	1-12
A	EP 0424648 A2 (GENERAL INSTRUMENT CORPORATION), 2 May 1991 (02.05.91), cited in the application -- -----	1-12

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search

30 Sept. 1997

Date of mailing of the international search report

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

01/09/97

International application No.  
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